



# Integrating Practices and Content in Mathematics and Science

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Rhode Island Department of Education MATHEMATICS AND SCIENCE PARTNERSHIP GRANT APPLICATION In Accordance with Title II, Part B Sec. 2201, 2202, and 2203 of the Elementary and Secondary Education Act, as amended by the No Child Left Behind Act of 2001.

**RIDE**

**2012-2013**

This grant application is available to all qualifying Local Education Agencies (LEA's) interested in partnering with the Rhode Island Department of Elementary and Secondary Education (RIDE) and an Institute of Higher Education (IHE) to address the educational needs of the State of Rhode Island and to build capacity and sustainability for professional development around standards based mathematics and science practices.

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Rhode Island Department of Education  
**MATHEMATICS AND SCIENCE PARTNERSHIP  
GRANT APPLICATION**

## **I. PROJECT BACKGROUND**

The Mathematics and Science Partnerships (MSP) program provides formula grants to states under ESEA Title II, Part B Sec. 2201, 2202, and 2203, as amended by the No Child Left Behind Act of 2001. The purpose of the program is to fund professional development activities that are designed to improve teachers' content knowledge and teaching skills, and that lead to improved academic achievement of students in the areas of mathematics and science through partnerships between institutions of higher education (IHEs) and local educational agencies (LEAs). The Rhode Island Department of Education (RIDE) is responsible for the administration of the MSP program and will award funds to support successful proposals. *Integrating Practices and Content in Mathematics and Science* is designed to respond to the needs expressed concerning mathematics and science statewide. It is also designed to meet the purposes and goals of MSP.

The current status of mathematics and science education in Rhode Island mirrors national trends of urgency associated with development and instructional supports for the delivery of internationally benchmarked standards. In response to this urgent call, Rhode Island has adopted, and is currently implementing, the Common Core State Standards in Mathematics (CCSS-M) and is a lead state in the development of the Next Generation Science Standards (NGSS) based on the *Framework for K-12 Science Education*, both of which are internationally benchmarked and are focused on improving student achievement and instructional supports for teachers with the identification, integration and intersection of practices with disciplinary core ideas (content).

“The Standards for Mathematical Content are a balanced combination of procedure and understanding... In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.”<sup>1</sup>

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<sup>1</sup> Common Core State Standards Initiative, “Mathematics, Introduction, Standards for Mathematical Practices”, 2012  
< <http://www.corestandards.org/the-standards/mathematics/introduction/standards-for-mathematical-practice/>> (Sept. 2012)

Rhode Island is a key member of a state-led process in which state policy leaders, higher education, K-12 teachers, and the informal science and business community work together in the development of *Next Generation Science Standards* which are grounded in the National Research Council's document *A Framework for K-12 Science Education: Practices, Cross Cutting Concepts and Core Ideas (Framework)*. The Framework articulates a broad set of expectations for students which are built around three major dimensions; scientific and engineering practices, crosscutting concepts, and core disciplinary ideas and is meant to be a guide for the NGSS.

"The *Framework* is designed to help realize a vision for education in the sciences and engineering in which students, over multiple years of school, actively engage in science and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields...the Framework emphasizes that learning about science and engineering involves integration of the knowledge of scientific explanations (i.e., content knowledge) and the practices needed to engage in scientific inquiry and engineering design. Thus the Framework seeks to illustrate how knowledge and practice must be intertwined in designing learning experiences in K-12 education".<sup>2</sup>

The drive towards using internationally benchmarked standards also comes with a need to address gaps in instruction, primarily instruction around using practices in both mathematics and science. As one method to address these gaps in instruction, Rhode Island intends to develop intensive summer professional development and offer online modules focused on the integration and intersection of practices and content in mathematics and the integration and intersection of practices, crosscutting concepts and disciplinary core ideas in science. The development of these instructional supports is very timely; it is expected that Rhode Island LEA's will fully implement the Common Core State Standards in Mathematics by fall 2013 and, as a lead state, Rhode Island has committed to strongly consider the adoption of NGSS, which are expected to be completed in Spring of 2013.

The Rhode Island Department of Elementary and Secondary Education (RIDE) is seeking LEAs to partner with an Institute of Higher Education (IHE) to enhance student learning and teacher instruction using the CCSS-M and/or NGSS. LEAs may apply to participate in one or both professional development (PD) options being offered. Professional development will be centered on the integration and intersection of mathematical practices and content and/or the integration and intersection of practices, crosscutting concepts and disciplinary core ideas in science. Teachers in the selected LEAs will participate in intensive summer course work and follow-up PD sessions throughout the school year. During the 2013-14 school year, participants will be videotaped in their classrooms as they implement elements of their summer training in model lessons. Videos will be used to highlight instructional best practice, reflective thinking, and growth. Additionally, these videos will serve as the basis for online modules modeled after the intensive summer course work. The online modules will be made available to all Rhode Island educators.

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<sup>2</sup> National Research Council, "A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Idea," 2011, <[http://www.nap.edu/openbook.php?record\\_id=13165&page=8](http://www.nap.edu/openbook.php?record_id=13165&page=8)>

## II. PROGRAM DESCRIPTION

### **Purpose<sup>3</sup>**

The Mathematics and Science Partnerships (MSP) program funding is dedicated to the creation of professional development activities that are designed to improve teachers' core content knowledge and instructional practice which will ultimately lead to improved student learning. MSP funded partnerships must include faculty from the mathematics, sciences, technology and/or engineering faculty of institutions of higher education (IHE), and high need<sup>4</sup> local school districts with the purpose of improving teachers' core content knowledge and skills. The enabling legislation describes the purposes for the MSP program as follows:

- To improve and upgrade the status and stature of mathematics and science teaching by encouraging IHEs to assume greater responsibility for improving mathematics and science teacher education through the establishment of comprehensive system of recruiting, training, and advising mathematics and science teachers;
- To focus on the education of mathematics and science teachers as a career –long process that constantly stimulates teachers' intellectual growth and upgrades teachers' knowledge and skills;
- To bring mathematics and science teachers in elementary and secondary schools together with scientists, mathematicians, and engineers to increase the subject matter knowledge of mathematics and science teachers and improve the teaching skills of such teachers;
- To develop more rigorous mathematics and science curricula that is aligned with State and local standards; and
- To improve and expand training of mathematics and science teachers, including training such teachers in the effective integration of technology into curriculum and instruction.

### **Rhode Island's Priority**

RIDE will award the 2013-2014 ESEA Title II, Part B MSP funding to two partnerships: one for mathematics; one for science. The two projects will improve student learning and teacher instruction in K-12 mathematics and science through:

- Engagement in high quality professional development the collaboration and coordination of efforts between an LEA, IHE, and RIDE; and
- Consistency with school improvement initiatives in mathematics and science through the development and usage of online modules.

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<sup>3</sup> U.S. Department of Education, "Part B – Mathematics and Science Partnerships," 2004, <[www.ed.gov/policy/elsec/leg/esea02/pg26.html](http://www.ed.gov/policy/elsec/leg/esea02/pg26.html)> (March 2009)

<sup>4</sup> For the purposes of this grant, a high-need district meets at least one of the following conditions:

- (a) At least 20 percent of its students qualify for free or reduced meals.
- (b) At least one school in the district has not met AYP in mathematics for a minimum of three years.
- (c) Fewer than 50 percent of students tested scored Proficient or Advanced on the 2012 NECAP test in mathematics/science.

## **Goals and Objectives**

*Integrating Practices and Content in Mathematics and Science* seeks LEAs to partner with RIDE and qualified IHEs with the intent of improving student learning and instructional practice in mathematics and/or science. The partnership requires an LEA (or LEA partnership) and an IHE to engage in an intense professional development program commencing in the summer of 2013 and to rigorously evaluate the initial effectiveness of that program at the end of the school year in 2014.

### **Specifically:**

- LEAs focusing on mathematics will deeply study the integration and intersection of practices and content in mathematics with the dual goal of increasing content knowledge and the ability to integrate the Standards for Mathematical Practice into instruction;
- LEAs focusing on science will deeply study the integration and intersection of the scientific and engineering practices, crosscutting concepts, and disciplinary core ideas during instruction with the goal of infusing these dimensions into science instructional practice.
- Participants in both disciplines will:
  - Identify, refine, and deliver model lesson plans, to be videotaped, that highlight the implementation of integrated practices and content.
  - Engage in reflective discourse throughout the delivery of professional development and subsequent videotaping.

### **The work of this grant shall:**

- Directly relate to the curricular and academic areas in which the teacher provides instruction;
- Enhance the ability of the teacher to apply and use the state adopted content standards in mathematics (CCSS-M) and/or Science (NGSS) within existing curricula; and
- Train and support educators on the integration and intersection of practices and content standards into instructional practice.

### **Eligible Partnerships**

As defined in Sec. 2201(b) of Title II, Part B, partnerships must include an engineering, mathematics, or science department of an IHE and a high-need LEA. Partnerships may also include other IHE, LEA, business, and community partners. Based on the current priorities in Rhode Island, the partnership must focus on the development of mathematics and/or science content and instructional strategies focusing on the integration and intersection of practices and content from the CCSS-M and/or the NGSS and *Framework*. All parties involved share responsibility and accountability for project implementation and outcomes. Each partnership must designate a project director to serve as point of primary contact for the LEA(s). The partnership must be active and well-defined in all aspects of the grant, including planning, delivery, and evaluation of the professional development.

### **LEA Partners**

To be eligible for a MSP grant award, an applicant LEA must demonstrate a need for improvement in student performance in mathematics and/or science, have written and aligned curriculum in mathematics and/or science or, completed and started to implement aligned curriculum in mathematics and/or science. Preference will be given to LEAs who demonstrate high-need status or partnerships which include at least one high-need district. Applicants are encouraged to partner with other districts for collaboration and shared best practices.

For the purposes of this grant, a high-need district is defined as one that meets at least one of the following conditions:

- At least 20 percent of its students qualify for free or reduced meals.
- At least one school in the district has not met AYP in mathematics for a minimum of three years.
- Fewer than 50 percent of students tested scored at the Proficient or Proficient with Distinction level on the 2012 NECAP assessment in Mathematics or the 2012 NECAP assessment in Science.

In addition, each LEA must:

- Ensure educator (teacher and building leader) participation in each session of the project's professional development for the duration of *Integrating Practices and Content in Mathematics and Science*;
- Include both school and district leaders in the training to build awareness of the purpose and intent of the PD and to support teachers as they implement their training in the classroom;
- Carry out the action steps designed to meet the goals of the project;
- Participate in evaluations to determine the progress and effectiveness of the work;
- Carefully document use of MSP funds and complete all necessary reports and updates, as required by RIDE and the U. S. Department of Education; and
- Clearly articulate how this program will integrate with other ongoing mathematics or science school and/or district reform initiatives.

### **IHE Partners**

Selected LEAs will work with RIDE to identify IHEs that will serve as subject matter experts to develop and deliver the intensive summer professional development, follow-up professional development on the integration and intersection of practices and content for CCSS-M and the *Framework* for science. Selected IHEs are also responsible to either produce e-Learning modules or work in tandem with a developer to produce high-quality, on-demand, professional on-line learning modules.

### **Project Requirements:**

Although the basic structure of the MSP projects will be similar, the details of the partnerships should respond to the unique needs of a district and its teachers and students. LEAs should have a

clear content focus in mind that is in line with their needs. *Integrating Practices and Content in Mathematics and Science* seeks LEAs which will, working closely with RIDE, select and work intensively with an IHE that demonstrates deep knowledge of the content outlined in one or both of the internationally benchmarked standards, CCSS-M and/or the NGSS. Additionally, the IHE should be well versed in the Standards for Mathematical Practice and/or the intersection of the three dimensions of science and engineering practices crosscutting concepts, and disciplinary core ideas. Selected LEA's will partner with RIDE and an IHE to participate in two phases of the *Integrating Practices and Content in Mathematics and Science*;

(1) Intensive face-to-face professional development geared towards CCSS-M and/or the *Framework/NGSS* and follow-up professional development throughout the 2013-2014 school year which will include but, is not limited to, reflective discourse, best classroom practices and professional growth videos;

(2) Full LEA faculty participation in e-Learning modules for those teachers who work directly with the academic content that the LEA has selected to pursue (CCSS-M and/or NGSS)

#### **Intensive Professional Development:**

In addition to the requirements for partnerships and the goals and objectives mentioned above, intensive summer professional development must meet the following requirements:

- Projects must focus on core content for grades K-12 mathematics and/or science.
- Project details must address the results of a comprehensive needs assessment, specifically around curriculum, instruction, and assessment practices.
- Projects must have a strong district leadership component (i.e., department chairs, teacher leaders, central office administrators such as; district curriculum coordinators, assistant superintendents,) willing to provide the time, resources, and support necessary for a successful and sustainable endeavor.
- District or multi district teams of up to 50 individuals should include:
- A minimum of one Special Education teacher and one English Language Learning teacher;
- Teachers, teacher-leaders<sup>5</sup> and content-area coaches representing each level or subject area (mathematics or science)<sup>6</sup>; Elementary (K-5), Middle (6-8), and High School (course teachers);
  - Districts focusing on science: teacher teams from all grade levels must be represented on LEA or partner LEA teams.
  - Districts focusing on mathematics: grade span teacher teams should be assembled based on need with respect to the critical areas of focus identified by the CCSS-M and the major clusters as outlined in the PARCC Model Content Frameworks.

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<sup>5</sup> Teacher-leaders must be current classroom teachers who exhibit the qualities identified in Rhode Island's "Standards for Educational Leaders."

<sup>6</sup> In the case of multi-school or multi-district partnerships, there should be equal representation.

- Involvement of a principal or assistant principal across all grade levels: elementary, middle, and high school;
- At least one central office administrator from each LEA.
- Project participants must commit to ten consecutive days of intensive, face-to-face summer professional development and six; one-day professional development sessions spread over the 2013-2014 school year.
- Project participants must complete all assignments and follow-up activities that are included in the professional development sessions.
- Project participants must agree to be video-taped during PD training, before classroom instruction, during classroom instruction and after classroom instruction to showcase the integration of practices and content and professional growth through reflective discourse.
- Projects should include opportunities for participants to share experiences and lessons learned from the *Integrating Practices and Content in Mathematics and Science* work with colleagues to support its goals and objectives in the district.
- LEAs must be willing to commit to the intensive professional development program for one year.

#### **e- Learning Modules**

Upon completion of the intensive PD, participating LEAs will commit to a scale up of the *Integrating Practices and Content in Mathematics and Science* work by implementing LEA wide e-Learning Modules. The modules that are produced as a result of the training and videotaping of lessons should be shared with all teachers charged with instructing the content used as the basis for the intensive PD. Additionally, any educator that supports the instruction of said content (special educator, ELL teacher, etc.) should also be encouraged to interact with the modules.

#### **Evaluation**

LEAs will be required to participate in the evaluation of the project. The MSP grant requires RIDE to work in partnership with an IHE to develop an evaluation and accountability system that includes measurable objectives related to the goals of the project, assessing both implementation and impact. It may include an analysis of student performance and achievement on the New England Common Assessment Program (NECAP) state assessments for mathematics and science as well as additional assessment tools such as interim assessments, LEA wide benchmarks, end of course, and common assessments as designed and managed by the evaluator. The IHE will be an active partner from the planning through completion of the final reports Project participants must take part in all components of the evaluation.

### **III. FUNDING**

#### **Grant Awards**

Grants will be awarded for a 12-month period once an IHE is identified. Subsequent years of funding will be dependent upon successful completion of project requirements, interim goals, and deadlines. Continuation of funding beyond the initial year is dependent upon federal reauthorization.

#### **Fund Use**

Funds received may be used to support professional development programs and content development in mathematics or science that is directly related to the goals and objectives of *Integrating Practices and Content in Mathematics and Science*.

Funds may be used for project activities including, but not limited to, the following:

- Higher education consultants
- Teacher stipends
- Substitute coverage
- Administrative costs
- Materials for professional development
- Evaluation, recommended not to exceed 10% of the project budget
- Indirect costs, recommended not to exceed a rate of 8%

Funds may not be used for:

- Materials for classroom use
- Food

Budgets will be determined once an IHE partner is identified. No budget descriptions are necessary at this time.

## **IV. APPLICATION AND REVIEW**

#### **Review Process**

Proposals will be reviewed by RIDE staff for completeness and compliance with the regulations set forth in this RFP and Title II, Part B Sec. 2201, 2202, and 2203 of the Elementary and Secondary Education Act, as amended by the No Child Left Behind Act of 2001 to determine applicant eligibility. Grants will be awarded through a competitive review process, according to criteria outlined below. The process is intended to identify applications that meet the criteria set forth in the application and describes a sound plan for implementation.

#### **Proposal Requirements**

Each proposal submitted must include:

*Coversheet:*

Use the form provided in the Appendix A.

*Statement of Assurances:*

Refer to RIDE's assurances page provided in the Appendix B.

*Statement of Commitment:*

This section must include a signed letter of commitment from the partners, stating that the proposed activities of the project will be implemented as described in the proposal along with the identification of a Project Director who will act as point person for all communication between the LEA or LEA partnership, RIDE, vendors and the U.S. Department of Education.

*Statement of Intention and Need:*

This section shall include a brief narrative describing how being a part of *Integrating Practices and Content in Mathematics and Science* will improve the LEA(s) student achievement, teacher instruction, and how the LEA or LEA partnership plans to sustain the work. LEAs or LEA partnerships should minimally address the following areas, but not limited to:

- Alignment of Project Goals/Objectives with District Needs
- Sustainability
- Commitment
- Capacity
- Justification for and Evidence to Support Content Selection

*Need and Readiness Assessment:*

This section must include the following assessments for need and readiness;

- (1) Identification of being a High-need LEA (*please refer back to the requirements for High-need as identified in section 1. LEA Partners*) or identification of working in partnership with a High-need school;
- (2) An outline that includes a plan for release of staff during the school year sessions, a breakdown of the grade levels and content areas of participating teachers, and, if applicable, a strategy for the facilitation of communicating and integrating work within an LEA partnership;
- (3) An outline of completed curriculum that is in place or, evidence that a curriculum is being written and will be implemented and aligned to the CCSS-M and/or the current Science GSE's; and
- (4) An identification and justification of need with respect to content.
  - i. For mathematics, this content will serve as the platform for investigating the Standards for Mathematical Practice. LEAs should provide evidence of a comparison between their student performance data with the critical areas of focus identified by the CCSS-M and the major clusters as outlined in the PARCC Model Content Frameworks.
  - ii. For science, the identified content will strongly be considered in the design of professional development training, which will focus on student achievement/engagement and classroom instruction using a three dimensional performance expectation. LEA's should provide evidence of content area need by comparing various student performance data, examples include but are not limited to;

multiple years of NECAP assessment in science, formative assessment data, summative assessment data, district level assessment data.

*Content-Area Program(s)/Initiative(s):*

This section provides a list of all current mathematics or science program(s)/initiative(s) in the applicant district(s). Each should include the program/initiative name, the date it began, and a brief description of the purpose and result. Any past program(s)/initiative(s) should also be included.

**The point breakdown is as follows:**

<b>CRITERIA</b>	<b>TOTAL POINTS POSSIBLE</b>
Demonstration of Need	20
Readiness	20
Capacity	15
Alignment of Project Goals/Objectives with District Needs <i>(covered in the Statement of Intention and Need)</i>	15
Commitment <i>(covered in the Statement of Intention and Need)</i>	10
Sustainability <i>(covered in the Statement of Intention and Need)</i>	10
Content-Area Program(s)/Initiative(s)	10

**Program Administration**

*Notification:*

Once the review process is completed, the Project Director will be notified of the status of the proposal. RIDE staff will contact the Project Director to discuss any modifications of the project plan that may be required to maximize the effect of funds.

*Reporting:*

All partnerships are required to report annually to RIDE and to the U.S. Department of Education regarding their progress in meeting project objectives and targets. The annual report required for this grant is the APR, which is completed online. Further information regarding reporting requirements and forms will be communicated to the Project Directors.

For questions regarding this application please contact Jennifer Golenia, Science and Technology Specialist in the Office of Instruction, Assessment and Curriculum via email, [Jennifer.golenia@ride.ri.gov](mailto:Jennifer.golenia@ride.ri.gov) or by phone (401)-222-8406.

Please send all completed applications to the Office of Instruction, Assessment and Curriculum via email to Mona Gevorkian, [mona.gevorkian@ride.ri.gov](mailto:mona.gevorkian@ride.ri.gov) or by fax to the attention of Mona Gevorkian at 401-222-3605. All completed applications are due by Close of Business on **December 21, 2012**.